

Application Serial No. 09/683,437

Attorney Docket No. 57761.000205

The current listing of claims is as follows:

1. (Currently amended) A method for determining a shorted thyristor cell in a bridge that supplies a load from a source, the bridge including a plurality of the thyristor cells, the method including:

5 sequentially gating each of the cells to a conducting state, so that only one cell is gated at one time;

providing at least one current transformer in the bridge;

generating a current flow that passes through the bridge including the one cell that is gated;

10 observing current in the at least one current transformer to determine a short in one of the cells ~~the~~ that is not gated; and

determining a shorted cell based on the step of observing current in the at least one current transformer.

2. (Original) The method of claim 1, wherein the at least one current transformer is placed on incoming lines to the bridge.

3. (Original) The method of claim 1, wherein the bridge supplies the load to a motor.

4. (Original) The method of claim 1, wherein the bridge further includes a shunt, the shunt having a shunt current signal value.

20 5. (Original) The method of claim 4, wherein the current flow that is generated is below the shunt current signal value.

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6. (Currently amended) The method of claim 4, further including the step of rectifying and scaling a current flow of the at least one current transformer that passes through the bridge, so that a signal level of the current flow that passes through the bridge is substantially ~~that~~the same as that of the shunt current signal value under non-shortcd cell conditions.

5 7. (Original) The method of claim 1, wherein the method further includes the step of:

providing a shunt in the bridge; and

the step of determining a shorted cell is performed based on the observing current in the at least one current transformer and by observing current in the shunt to be above a threshold
10 level.

8. (Original) The method of claim 1, wherein the step of determining a shorted cell is performed based on the observing current in the at least one current transformer and observing the bridge voltage to be above a threshold level.

9. (Original) The method of claim 8, wherein the bridge supplies the load to a
15 motor.

10. (Original) The method of claim 1, where in the step of observing current in the at least one current transformer to determine a short in one of the cells that is not gated includes using a look-up table to correlate which cell is tested based on which cell is gated.

11. (Original) The method of claim 1, wherein the thyristor cell is a silicon controlled
20 rectifier (SCR) cell.

12. (Original) The method of claim 1, wherein the source is a single phase source.

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13. (Original) The method of claim 12, wherein the at least one current transformer is one current transformer.

14. (Original) The method of claim 1, wherein the source is a three phase source, and wherein the at least one current transformer is two current transformers.

15. (Original) A method for determining a shorted thyristor cell in a bridge that supplies a load from a source, the bridge including a plurality of the thyristor cells, the method including:

sequentially gating each of the cells to a conducting state, so that only one cell is gated at one time;

providing at least one current transformer in the bridge, the at least one current transformer being placed on incoming lines to the bridge, the bridge supplying the load to a motor;

generating a current flow that passes through the bridge including the one cell that is gated, and wherein the bridge further includes a shunt, the shunt having a shunt current signal value, and wherein the current flow that is generated is below the shunt current signal value;

observing current in the at least one current transformer to determine a short in one of the cells the that is not gated; and

determining a shorted cell based on the step of observing current in the at least one current transformer.

16. (Original) The method of claim 15, wherein the thyristor cell is a silicon controlled rectifier (SCR) cell.

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17. (Original) The method of claim 15, wherein the source is a single phase source.

18. (Original) The method of claim 17, wherein the at least one current transformer is one current transformer.

19. (Original) The method of claim 15, further including the step of rectifying and scaling a current flow of the at least one current transformer that passes through the bridge, so that a signal level of the current flow that passes through the bridge is substantially the same as that of the shunt current signal value under non-shortcd cell conditions.

20. (Original) The method of claim 15, wherein the step of determining a shortcd cell is performed based on the observing current in the at least one current transformer and by observing the bridge voltage to be above a threshold level.

Please add claims 21 and 22 as follows:

21. (New) The method of claim 4, wherein:

if current within the shunt is above a threshold level, current transformer current detection is ignored and a look-up table for the shunt is used; and

if a current transformer current threshold level is reached and the shunt current is below the threshold level, a look-up table for the current transformer is used.

22. (New) The method of claim 4, wherein current transformer detection of a shortcd thyristor cell is used in conjunction with shunt detection of a shortcd thyristor cell.